

## EURANDOM

### Executive Summary of the Annual Report 2004

#### 1. MISSION STATEMENT

The present executive summary is based on the figures in the annual report of EURANDOM covering the year 2004, and compares these to the years 1998 - 2003.

The mission of EURANDOM is to foster research in the stochastic sciences and their applications. It achieves this mission by recruiting and training talented young researchers and helping them to find their way to tenured positions in academia and industry; by carrying out and facilitating research through postdoctoral and graduate appointments, visitor exchange and workshops; by taking initiatives for collaborative research at the European level.

#### 2. FOCUS

Since the summer of 2004, the research at EURANDOM is re-aligned into three parallel programmes, each with three themes:

##### *Queueing and Performance Analysis (QPA):*

Performance Analysis of Production Systems; Performance Analysis of Communication Systems; Queueing Theory.

##### *Random Spatial Structures (RSS):*

Critical Phenomena; Disordered Systems; Combinatorial Probability.

##### *Statistical Information and Modelling (SIM):*

Statistical Learning; Statistics in Biology; Industrial Statistics.

**QPA** is concerned with the performance analysis of stochastic networks, in particular, production and communication systems. Queueing theory and stochastic analysis provide the means to deal with control and optimisation issues.

**RSS** focuses on systems consisting of a large number of interacting random components, possibly with disorder. It aims to capture their large space-time behaviour through a combination of probabilistic, combinatorial and ergodic techniques, with special emphasis on critical phenomena and universality.

**SIM** combines analytic and algebraic methods to address a variety of statistical questions, including statistical classification, bootstrap, micro-arrays, gene expression, design of experiments, predictive maintenance and quantum statistics.

In addition to the above three research programmes, EURANDOM runs two research projects, one on **Battery Modelling and Management (BMM)** and one on **Reinsurance (RI)**.

#### 3. STAFF AND RESEARCH

Each programme hosts six to eight postdocs and graduate students, is supervised by senior scientific advisors, and is guided by an international steering committee. Through the choice of themes, special attention is given to the interfaces with physics, biology, telecommunication and industry.

EURANDOM offers attractive scientific surroundings to conduct research on random phenomena. Since its start, some 80 PD's and PhD's have been working at EURANDOM. About 25 junior researchers are working at EURANDOM at any time. Most of the researchers (80%) found tenured positions in academia or industry after they left the institute.

#### 4. FACTS AND FIGURES

##### 4.1. Workshops and conferences

Workshop topics are chosen by the scientific advisors and by the steering committees of the research programmes. Ideas for topics are collected from postdocs and senior visitors, and through the various European networks and programmes in which EURANDOM participates.

Workshops and conferences held at EURANDOM in 2004:

January 9 and 10, 2004:

**EURANDOM Alumni Days**. Participants: 20

February 23 and 24, 2004

**Meeting of the Dutch-German Bilateral Research Group on "Mathematics of Random Spatial Models from Physics and Biology"**. Participants: 20. The BRG programme is sponsored by DFG and NWO.

March 29 to April 2, 2004

**Workshop on "Conformal Invariance, Scaling Limits and Percolation"**, which is part of a series of workshops entitled **"Young European Probabilists" (YEP)**. Participants: 35. Sponsored by EURANDOM, the ESF Scientific Programme RDSES, the Thomas Stieltjes Institute for Mathematics and the DFG-Schwerpunkt SPP 1033.

May 3 and 4, 2004

**Workshop on "Exotic Option Pricing under Advanced Lévy Models"**. Participants: 120. Sponsored by EURANDOM, NWO, KNAW and Journal of Applied Econometrics.

June 14-18, 2004

**Workshop "mODa (Model Oriented Design and Analysis) 7"**. Participants: 60. Sponsored by EURANDOM, the European Commission, GlaxoSmithKline, London School of Economics and NWO.

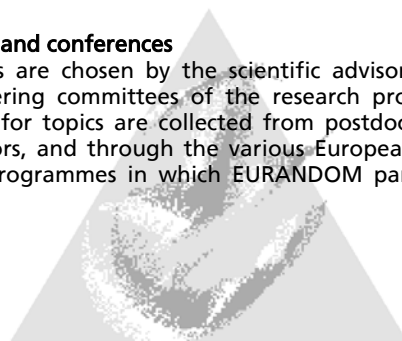
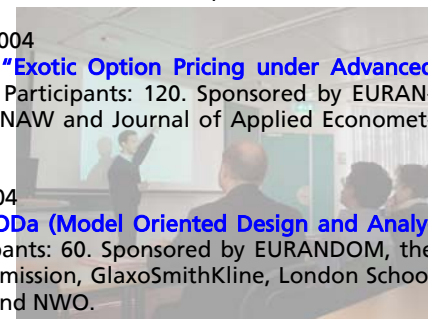
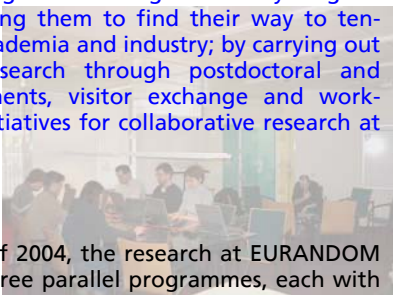
July 5 and 6, 2004:

**Workshop on "Quantitative Models for Production and Communication Networks"**. Participants: 45. Sponsored by EURANDOM, BETA Research School and NWO.

October 7-9, 2004

**Workshop on "Notions of Complexity: Information-Theoretic, Computational and Statistical Approaches"**. Participants: 30. Sponsored by EURANDOM and the EC Network of Excellence PASCAL.

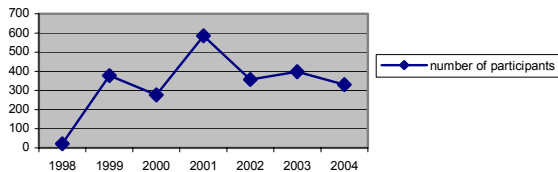
**Number of workshops at EURANDOM in 2004: 7**  
**Total number of participants: 330**



Furthermore, EURANDOM co-sponsored:

- "Nederlands-Belgisch Mathematisch Congres 2004", April 16 and 17, 2004.
- "ECMI", 10-th European Conference on Mathematics for Industry, June 21-25, 2004.
- Colloquium on "Risk Analysis: Statistical and Probabilistic Methods", May 27 and 28, 2004, organised on the occasion of the retirement of Professor J. Teugels from the Katholieke Universiteit Leuven.
- Workshop "Stochastic Processes from Physics and Biology", November 26 and 27, 2004, of the Dutch-German Bilateral Research Group "Mathematics of Random Spatial Models from Physics and Biology", Vienna.

Number of participants of workshops



#### 4.2. Lectures and seminars

Lectures and seminars are organised on a regular basis within the framework of each of the three research programmes and the RI project. Sometimes seminars are joint events, e.g. the QPA-SOR seminar with TU/e, the national Mark Kac seminar and the national Quantum seminar.

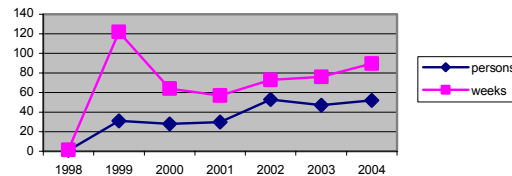
**Number of lectures and seminars in 2004: 106**

#### 4.3. Visitors

In 2004, EURANDOM hosted 1 long-term visitor (for 6 months), 2 researchers visited EURANDOM during 6 months on a monthly basis, 2 visitors stayed for 1 month and 47 visitors stayed for a shorter period (a few days up to 1 month).

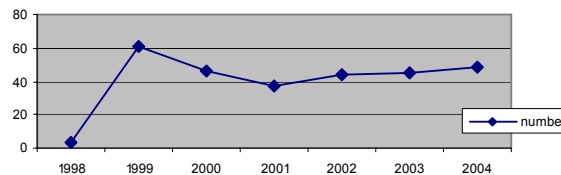
**Number of visitors in 2004: 52**  
**Total duration of stay: 89,5 weeks**

Visitors



#### 4.4. Publications

EURANDOM Reports



**In 2004, 49 EURANDOM Reports were written, while 124 publications appeared in international refereed journals**

#### 4.5. Staff

	Jr. staff	Dir.	Adm.	Sci.Adv.	Res.Fel.
People in numbers*	27	3	5	12	7
People in fte**	26,4	2	3,6	2,1	n.a.
* total					
**full-time equivalent					

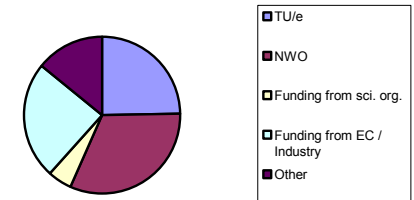
Turnover junior staff



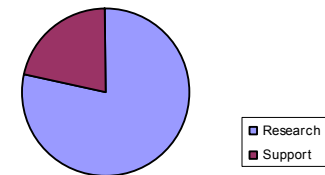
## 5. FINANCE

The following figures report on income and expenditure:

INCOME 2004



EXPENDITURE 2004



*Research* includes costs of salary of postdocs and graduate students, scientific director, scientific advisors, EURANDOM chair, computing, library, workshops & visitors and travel costs.

*Support* includes salary of the administrative staff and managing director, housing, depreciation and general costs.

Prof.dr. W.Th.F. den Hollander,  
 Scientific Director  
 Eindhoven, May 2004

The full text of the Annual Report 2004 is available at the EURANDOM secretariat, [office@eurandom.tue.nl](mailto:office@eurandom.tue.nl), PO Box 513 – 5600 MB Eindhoven, The Netherlands. Telephone +31 40 247 8100 <http://www.eurandom.tue.nl>